

# Value relevance of accounting information under an integrated reporting approach: A research note

Diogenis Baboukardos\*

Gunnar Rimmel

Jönköping International Business School

Accepted for publication in

**Journal of Accounting and Public Policy**

on 1<sup>st</sup> March 2016

Baboukardos, D. and Rimmel, G. (2016)

Value relevance of accounting information under an integrated reporting approach: A research note. *Journal of Accounting and Public Policy*, 35 (4). pp. 437-452

\* Corresponding author

# Value relevance of accounting information under an integrated reporting approach: A research note

## Abstract

This research note aims to enrich our understanding regarding the market valuation implications of financial reporting under an Integrated Reporting (IR) approach. In order to do so, we focus on the Johannesburg Stock Exchange (JSE) and we examine whether the value relevance of summary accounting information (i.e., book value of equity and earnings) of firms listed on the JSE has enhanced after the mandatory adoption of an IR approach under the King III Report. Our study can be seen as a response to the recent calls for a closer investigation of the usefulness of the new reporting trend for investors. More specifically, our study can be seen as a response to the stance taken by the International Integrated Reporting Council (IIRC) Framework that the adoption of an IR approach improves the usefulness of financial reporting for investors. For our empirical tests we utilize a sample of 954 firm-year observations and employ a linear price-level model which associates a firm's market value of equity with its book value of equity and earnings. In line with the IIRC Framework's expectations, we find strong evidence of a sharp increase of the earnings' valuation coefficient. However, contrary to the Framework's stance, our results indicate a decline in the value relevance of net assets. Such a decline may be imputed to risks and/or unbooked liabilities that are revealed or measured more reliably after the introduction of an IR approach on the JSE. It should be noted, however, that despite its cause, the decline in the value relevance of net assets can be seen as a further argument in favor of the IIRC stance to assign equal importance to a wide range of "capitals," such as human, social and natural capital. We believe that our findings are of particular interest to a wide range of regulators, standards setters, practitioners, and academics but first and foremost to the JSE and IIRC.

**Keywords:** Integrated reporting, King III, Value relevance, Net assets, Earnings, South Africa

**Abbreviations:** IFRS International Financial Reporting Standards

IR Integrated Reporting

IIRC International Integrated Reporting Council

JSE Johannesburg Stock Exchange

# 1. Introduction

Integrated Reporting (hereafter IR) has lately attracted much attention among practitioners and policy makers across the world. Regulators and capital markets authorities have started to endorse and, in some cases, require firms listed on their stock exchanges to provide information about their sustainability<sup>1</sup> and financial performance in an integrated manner<sup>2</sup>. According to the advocates of the new reporting trend, the adoption of an IR approach is expected to improve the quality of information for providers of financial capital and to promote a more cohesive and efficient approach to corporate reporting by connecting previously disconnected pieces of financial and sustainability information (Cho et al., 2013; Eccles & Saltzman, 2011; Eccles & Serafeim, 2011; Middleton, 2015). Similarly, the International Integrated Reporting Council<sup>3</sup> (hereafter IIRC), in its recently released Framework on IR, explicitly prioritizes the information needs of investors and clearly takes the stance that the adoption of an IR approach improves the usefulness of financial reporting to investors or differently the value relevance of financial information (IIRC, 2013). Nevertheless, whether the relevance of financial information is indeed enhanced by putting financial reporting into a wider, more integrated perspective, while applying the same accounting standards, is an open empirical question (Cheng et al., 2014; de Villiers, 2014; Solomon & Maroun, 2012).

Our study aims to enrich understanding on IR by providing empirical evidence on whether the value relevance of summary accounting information (i.e., book value of equity and earnings) of firms listed on the Johannesburg Stock Exchange (hereafter JSE) has enhanced after the

---

<sup>1</sup> “Sustainability reporting” and “sustainability report” refer to business reporting about environmental, social, governance, and health and safety related issues published by a firm through a separate report or in a distinctive section of its annual report.

<sup>2</sup> Some examples are Malaysia (Bursa Malaysia, 2010), Singapore (Singapore Exchange, 2011), Norway (Norwegian Ministry of Finance, 2014) and the European Union (European Commission, 2014).

<sup>3</sup> The International Integrated Reporting Council (IIRC) can be seen as the flagship of the IR movement where important global players of the economic and business community and policy makers have joined forces in order to develop and promote IR. More information about the IIRC is given in the second section.

mandatory adoption of an IR approach. In 2010, the JSE became the first capital market in the world to require the adoption of an IR approach by its listed firms. That was brought on by JSE's decision to include the then newly released King III Report (hereafter King III) in its listing requirements. King III calls for the integration of information about a firm's financial and sustainability performance (IDSA, 2009). Further, King III, as well as the IIRC Framework, acknowledge the importance of IR for capital market participants and recognize the need to contextualize financial reporting by reporting on how a firm has affected the economic life of its external environment. According to King III, such an approach will lead to reporting that enables an informed assessment of a firm's market value.

IR is a fairly new concept and, even though there are voices that explicitly call for the mandatory adoption of a reporting approach under which financial and sustainability information will be presented in an integrated manner (Cho et al., 2013; Eccles & Serafeim, 2011; Middleton, 2015), there is no empirical evidence on whether investors find integrated reports more decision-useful than traditional annual reports (Cheng et al., 2014; de Villiers, 2014; Solomon & Maroun, 2012). This study investigates whether the value relevance of summary accounting information has indeed increased after the mandatory adoption of an IR approach. For our empirical test we utilize a balanced sample of all non-financial and non-utilities firms listed on the JSE during the six-year period of 2008-2013 and employ a linear price-level model which associates a firm's market value of equity with its book value of equity and earnings. We test whether there is any significant change in the linear relationship between market values and reported accounting figures between the period before (that is 2008-2010) and the period after (that is 2011-2013) the mandatory adoption of King III in the JSE. We find strong evidence of a sharp increase of the earnings' valuation coefficient and a significant decline in the value relevance of net assets. In order to examine the sensitivity of our results, we perform a series of additional tests by utilizing alternative samples and different time periods. The results of all tests support our initial findings. Lastly, since the main notion behind

IR is the reporting of the interrelatedness of financial and sustainability activities, we provide some initial evidence on the interaction effects of accounting and sustainability performance figures on firms' market valuations under a mandatory IR approach. We find that the earnings' valuation coefficient is significantly higher in firms that exhibit high sustainability performance whereas the relationship of the book value of equity and market values is negatively affected by a relatively high sustainability performance.

Since South Africa was the first country in the world to make IR mandatory, our findings can be proved useful not only for the South African context, but for a much broader audience (Solomon & Maroun, 2012). First, we believe that our results are of particular interest to the IIRC. According to its recently published strategy plan for the period 2014-2017, "[the IIRC] *strives to be market-led and evidence-based, acting as a global center of excellence for corporate reporting reform*" (IIRC, 2014, pg.2). Our study supports IIRC's intention by providing empirical evidence on the market consequences of IR. Accounting standards setters, especially the International Accounting Standards Board, may also find our study useful since it provides insights into how IR differentiates the qualitative characteristics of accounting information as it is prepared under the International Financial Reporting Standards (hereafter IFRS). In addition, our results can be proven useful for capital markets authorities around the world that have already required or plan to require their listed firms to adopt an IR approach. Lastly, our study contributes to the academic debate on the usefulness of IR and the capital market effects of its mandatory adoption (Cheng et al., 2014; Cho et al., 2013; de Villiers, 2014; Eccles & Serafeim, 2011; Middleton, 2015; Solomon & Maroun, 2012).

The remainder of this study is structured as follows. The next section provides the background to the study and develops our research question. The research design and sample selection process are illustrated in the third section. The fourth section describes the basic empirical analysis, and the fifth section provides additional tests. The last section discusses the findings and draws conclusions.

## 2. Background and research question

In 2010, the Charles Prince of Wales' Accounting for Sustainability Project and the Global Reporting Initiative joined forces by founding the International Integrated Reporting Council (IIRC) in order to create a globally accepted reporting framework that would integrate financial, environmental, social, and governance information in a clear, concise, consistent, and comparable format (The Prince's A4S and The GRI, 2010). Since then, the IIRC has gained remarkable support by global players of the economic and business community and policy makers<sup>4</sup>. Three years after its foundation, the IIRC released its first endeavor, the International Integrated Reporting Framework (hereafter the Framework). According to the Framework, the main purpose of IR is "*...to improve the quality of information available to providers of financial capital to enable a more efficient and productive allocation of capital*" (IIRC, 2013, pg.4) and also "*...to explain to providers of financial capital how an organization creates value over time [by containing] relevant information, both financial and other*" (IIRC, 2013, pg.7). An integrated report is not a mere summary of information already provided through other means of reporting; on the contrary, it provides a holistic view of a firm's value creation by connecting previously disconnected pieces of information that refer to the combination, interrelatedness, and dependencies of a wide range of "capitals" such as financial, human, social, and natural capital (see paragraph 3.8 of the Framework). The Framework acknowledges that it is the interconnectedness of capitals that creates value and hence the integration of information will enable investors to make more informed decisions. In addition, it acknowledges the primary role of financial information since it urges for the use of financial statements as a point of reference to which all other information in an integrated report will be related (see paragraph 3.31 of the Framework). In summary, the Framework explicitly prioritizes the information

---

<sup>4</sup> Some examples are the United Nations, the International Accounting Standards Board, the World Economic Forum and the International Organization of Securities Commissions. Further information about the structure of the IIRC can be found on the Council's website: <http://www.theiirc.org/the-iirc/structure-of-the-iirc/>.

needs of investors and clearly takes the stance that the adoption of an IR approach improves the value relevance of financial information.

In 2010, the same year that the IIRC was founded, the JSE became the first capital market in the world to require the adoption of an IR approach by its listed firms. The South African King Committee on Corporate Governance,<sup>5</sup> named and chaired by Prof. Mervyn E. King,<sup>6</sup> released the King III Report in 2009, which calls for a holistic and integrated representation of a firm's financial and sustainability performance (IDSA, 2009). In the beginning of 2010, the JSE included compliance with King III in its listing requirements, and eventually, firms listed in JSE were required to issue an annual integrated report for fiscal years commencing on or after March 1<sup>st</sup> 2010. The scope of King III Report is broader than that of the Framework since it covers a wide range of governance issues such as the responsibilities of the board of directors and the governance of risk. Nevertheless, in its prelude it is acknowledged that the greatest breakthrough of King III is its focus on conducting business reporting in an integrated manner (IDSA, 2009). Similar to the Framework, King III acknowledges the importance of IR for capital market participants and it takes the stance that the integration of sustainability and financial reporting leads to relevant information for the assessment of a firm's performance (IDSA, 2009: Principle 9.1, par.7). Also, similar to the Framework, King III recognizes the central role of financial reporting and also the need to contextualize financial results by reporting on how a firm has affected, both positively and negatively, the economic life of its external environment in the previous year and how it plans to improve the positive and minimize the negative effects of its operations in the following years (IDSA, 2009). According to King III, such an approach

---

<sup>5</sup> South Africa has been in the forefront of sustainability reporting for the last two decades. In 1994, the King Committee on Corporate Governance, named and chaired by Prof. Mervyn E. King, issued its first report (King I Report) on corporate governance, which was focused on the stakeholders' interest and attempted to improve the financial, social, ethical, and environmental practices of South African firms. Several weaknesses within King I led to a second report (King II Report) published in 2002, which aimed to further improve sustainability reporting. Eventually, in September 2009, the King III Report was published.

<sup>6</sup> Prof. Mervyn E. King is a key player in sustainability reporting and corporate governance not only in South Africa but worldwide. He is currently serving, amongst others, as the Chairman of the King Committee on Corporate Governance in South Africa, as Chairman of the IIRC, and as Chairman Emeritus of the Global Reporting Initiative. For further information, visit <http://www.mervynking.co.za/>

will lead to information that enables an informed assessment of a firm's market value (IDSA, 2009: Principle 9.2, par.11).

The potential impact of IR on the relevance of financial reporting is also recognized by scholars such as Eccles and Saltzman (2011) who argue that if firms report their financial results without taking into account the impact of their operations on their external environment, it is highly questionable whether their financial performance is fairly presented on their financial statements. In addition, Cho et al. (2013), Eccles and Serafeim (2011), and Middleton (2015) second that requiring the adoption of an IR approach will further improve reporting quality. Nevertheless, whether the relevance of financial information is indeed enhanced by putting financial reporting into a mandatory integrated perspective, while applying the same accounting standards, is an open empirical question (Solomon & Maroun, 2012). Previous studies about the impact of sustainability reporting on the relevance of financial reporting have shown that albeit sustainability reporting affects the market valuation implications of financial reporting, this effect is not necessarily positive. Carnevale and Mazzuca (2014) find that European banks that disclose sustainability information exhibit a lower value relevance of their net assets than banks that do not disclose such information, whereas earnings value relevance does not differ between the two groups. Conversely, Lourenco et al. (2014) find that when a firm's unbooked intangible resources like human capital and reputation can be measured reliably by investors (due to the firm's inclusion in the Dow Jones Sustainability Index), the value relevance of its earnings increases, whereas the relevance of net assets is not affected. Lastly, Cormier and Magnan (2007) find that environmental reporting positively affects firms' earnings valuation multiple in a group of Canadian, French, and German firms. Based on the previous discussion, the purpose of this study is to empirically examine whether the IIRC Framework stance that an IR approach enhances the usefulness to investors of financial information holds. In order to do so, we set the following research question:



**R.Q.** Has the value relevance of summary accounting information (i.e. book value of equity and earnings) of firms listed on the Johannesburg Stock Exchange enhanced after the mandatory adoption of an Integrated Reporting approach under the King III Report?

South Africa offers an interesting and unique setting for the empirical examination of our research question due to a number of reasons. First, it was the first country in the world whose stock exchange required the publication of an annual integrated report. Hence, we are able to examine the value relevance of accounting information on the JSE over a relatively long window after the adoption of an IR approach. In addition, by focusing on a setting where IR is mandatory, we take advantage of uniformity in reporting since firms have to disclose both positive and negative aspects of their operations; therefore, investors' valuations are less distorted by differences in reporting incentives (Moneva & Cuellar, 2009). Solomon and Maroun (2012) corroborate the above argument by providing evidence that the quantity of sustainability information disclosed in the first year of the mandatory adoption of King III is substantially larger than that of the year before the adoption. Another advantage of examining the South African mandatory context is the power of our statistical tests since it provides the largest available sample of firms publishing an integrated report in the world. More, it should be noted that during the entire period under examination, the firms listed on the JSE had to prepare their financial statements under the same accounting standards (i.e. IFRS). Consequently, we expect that our results are not driven by changes in accounting standards. Last, prior studies that employ a research design similar to ours have found that summary accounting information of listed firms on JSE is highly value relevant regardless of the accounting standards applied (Prather-Kinsey, 2006; Venter et al., 2014). They also found that combining summary accounting information and voluntary sustainability reporting explains the market valuation of large listed firms in JSE better than focusing solely on financial information (de Klerk & de Villiers, 2012). Taking the results of these studies together, we

expect that the mandatory adoption of a reporting approach which emphasizes the importance of sustainability information and its interrelatedness with accounting information may differentiate the value relevance of the latter.

### 3. Research design: Model, sample and data sources

The purpose of this study is to examine whether the value relevance of summary accounting information of listed firms in JSE has enhanced after the mandatory adoption of King III and, consequently, the adoption of an IR approach. In order to do so, we compare the market valuation coefficients of summary accounting information over a three-year period before the adoption of King III against the first three years after the beginning of King III mandatory implementation. Firms listed on the JSE have to issue an annual integrated report for fiscal years commencing on March 1<sup>st</sup> 2010 onwards. Hence, firms had to issue their first mandatory integrated report for fiscal years ending on February 28<sup>th</sup> 2011 onwards. Due to the fact that all firms listed on the JSE have a fiscal year end date between February 28<sup>th</sup> and December 31<sup>st</sup>, all firms on the JSE had to issue their first mandatory integrated report within the 2011 calendar year. Hence this study compares the value relevance of firms' summary accounting information of the period 2008-2010 to that of the period 2011-2013.

Similar to other studies in this strand of literature (Berthelot et al., 2012; Hassel et al., 2005; Johnston, 2005; Lourenço et al., 2013; Sinkin et al., 2008), a linear price-level model which associates a firm's market value of equity with its book value of equity (BVS) and earnings (EPS) is employed as follows<sup>7</sup>:

$$PR_{it} = \alpha_0 + \alpha_1 BVS_{it} + \alpha_2 EPS_{it} + \alpha_3 D_{it} + \alpha_4 (D_{it} \times BVS_{it}) + \alpha_5 (D_{it} \times EPS_{it}) + \alpha_6 LOSS_{it} + \alpha_7 (LOSS_{it} \times EPS_{it}) + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SIZE_{it} + \sum_{j=1}^{j=8} \alpha_{11j} IND_{it} + \sum_{y=2008}^{y=2013} \alpha_{12y} YR_{it} + \varepsilon_{it}$$

---

<sup>7</sup> All variables used, their definitions, and the sources where the needed data is extracted from are presented in the Appendix.

The three basic variables (PR, BVS and EPS) are scaled by the number of common shares six months after a firm's fiscal year-end (Dimitropoulos et al., 2013; Lang et al., 2003). According to Barth et al. (2001), "*...an accounting amount is defined as value relevant if it has a predicted association with equity market values*" (Barth et al., 2001, pg. 79). Hence, BVS and EPS are regarded as value relevant as long as their respective coefficients  $\alpha_1$  and  $\alpha_2$  are found to be significantly different than zero. In our empirical setting, we posit that BVS and EPS are valued differently when an integrated reporting approach is adopted and hence the valuation coefficients  $\alpha_1$  and  $\alpha_2$  are expected to differ significantly in the period preceding the adoption of King III vis-a-vis the period after the adoption. In order to perform such a comparison, we estimate the above model by pooling observations from the entire period under examination (that is for three years before and three years after King III adoption) and introducing a period binary variable D, which equals one for the period after King III adoption (that is 2011-2013) and zero for the period before (that is 2008-2010). Binary variable D captures the mean change in the relation between market value and accounting variables after the adoption of King III. Most importantly for our analysis, in order to investigate whether there is a systematic difference in valuation of BVS and EPS between the two periods, we allow the variable D to interact with BVS and EPS. Hence, the focus of our test is on coefficients  $\alpha_4$  and  $\alpha_5$ : If these coefficients are found to be positive and significantly different than zero then it can be argued that the integrated reporting approach which was introduced in 2010 has enhanced the relevance of summary accounting information on the JSE whereas if they are found to be statistically significant but negative, it can be inferred that BVS and EPS have partially lost their relevance. In case the coefficients of the two interaction terms are not found to be significantly different than zero, it can be argued that the new reporting regime has no impact on the market

valuation of summary accounting information. Further, a number of control variables<sup>8</sup> are included in the model as described in the Appendix.

Regarding our data, Thomson Reuters Datastream database is the source of all accounting and market data used in our tests. For our sample selection we initially obtain all firms listed in the JSE during the six-year period 2008-2013, for which data is available in Datastream. Table 1 describes the sample selection process which results in a “balanced” sample of 159 firms that are found to be active and have available data over the six-year period under examination (i.e. 954 firm/year observations). Additionally to controlling for a number of firm, industry and time effects, utilizing a “balanced” sample is expected to diminish the probability that our results are driven by differences in particular characteristics of firms included in the pre-adoption but not in the post-adoption periods and vice-versa. Finally, it is worth to mention that our basic “balanced” sample contains 40 firms (i.e. 240 firm/year observations) that found to have voluntarily published at least one sustainability report over the three-year period before the mandatory adoption of King III. Voluntary sustainability reporting may affect our results since it has been found to have an impact on a firm’s market valuation (Berthelot et al., 2012; Schadewitz & Niskala, 2010) and on the value relevance of accounting numbers (Cormier and Magnan, 2007; Hughes, 2000). We further address this issue in section 5.2.

[Insert Table 1 about here]

---

<sup>8</sup> We control for industry-specific effects using a multiple dummy variable derived from eight out of the ten industries of the Industry Classification Benchmark. Further, in order to control for year-specific effects we include a multiple dummy variable derived from the number of years included in each specification of the model. Following Petersen (2009), in order to address firm time-invariant effects, standard errors are clustered by firm. Additionally, we control for differences in the relevance of earnings coefficients of loss-making firms (Baboukardos & Rimmel, 2014; Hayn, 1995; Joos & Plesko, 2005) by incorporating a binary variable which takes the value of one for loss-making firms and zero otherwise and we allow it to interact with earnings variable. We also control for the effect of financial leverage and, following similar studies (Lourenco et al., 2014; Qiu et al., 2014), we control for profitability and size effects. Detailed descriptions of the variables used are given in the Appendix.

## 4. Findings

Table 2 provides basic summary statistics of the variables utilized in the multivariate analysis for the full sample and for the pre- and post- King III adoption periods separately. The average firm in our full sample has a market and a book value of equity of South African Rands ZAR 28.91 and ZAR 13.02 per share respectively, whereas the average earnings per share is ZAR 3.31. A non-parametric Wilcoxon test reveals that there are no significant differences between the variable values in the two periods. The only exception is ROE which is found to be larger in the pre-adoption period. This is an expected finding due to the fact that the purpose of constructing a balanced sample is to test a more homogeneous group of firms and diminish the probability that our results are driven by differences in particular characteristics of firms included in the two periods.

[Insert Table 2 about here]

Table 3 reports Pearson's and Spearman's correlation coefficients for all variables used in the analysis. Correlation coefficients among independent variables are below 0.80 (even though close to in some instances), which is regarded as the conventional threshold above which severe multicollinearity problems are indicated (Gujarati, 1995). Besides that, the highest variation inflation factor (VIF) value is found to be 7.18, which may indicate some degree of multicollinearity. Employing alternative approaches for estimating our models generates results similar to our basic model (untabulated) but with much lower VIFs<sup>9</sup>.

---

<sup>9</sup> In order to reduce the risk of collinearity, we drop the interaction variables BVSxD and EPSxD, the period variable D and all control variables and we estimate our model for the pre- and post- adoption period samples separately. Then, we employ a Wald chi-square test in order to examine whether the coefficients of BVS and EPS, as they are estimated in the two sub-samples separately, differ in the pre- and post- adoption periods. Untabulated results are very similar to our initial analysis whereas the highest VIF of the two regressions drops to 2.70. Further we re-estimate the model using orthogonalized transformation of the main independent variables BVS and EPS. By orthogonalizing the two variables we obtain zero correlation between them. Untabulated results are in line with our initial analysis whereas the highest VIF drops to 1.42.

[Insert Table 3 about here]

Table 4, column 1 shows the estimated coefficients and standard errors of our model for the balanced six-year sample. To begin, the first, although expected, finding is that the coefficients of the basic summary accounting information variables BVS and EPS are positive and highly significant (1.187 and 2.325 respectively), which indicates that the book value of equity and earnings do affect the market valuation of firms on the JSE during the six-year period under examination.

[Insert Table 4 about here]

Turning our attention to the main test of our study, the coefficient of BVS during the first three years after the mandatory adoption of King III is found to be significantly lower in comparison to the last three years before the adoption. Specifically, the coefficient of the interaction variable BVSxD is found to be negative (-0.474) and statistically significant at the 1% level. With regard to the earnings, it is found that the value relevance of EPS significantly increased after the adoption of King III: the coefficient of the interaction variable EPSxD is positive (3.164) and statistically significant at the 1% level.

## **5. Additional tests**

Besides the primary design discussed before, we conduct a series of additional tests in order to examine the sensitivity of our results. First, we compare the average market valuation of summary accounting information before King III adoption against their value relevance in each of the first three years of the adoption separately; second, we re-estimate our model by utilizing alternative samples; and last, we examine whether the interaction between summary

accounting information and sustainability performance information has any market valuation implications after the mandatory adoption of King III.

### ***5.1 Period considerations***

As it is discussed before, our primary analysis is based on a sample that covers a six-year period: the last three years before and the first three years after the adoption of King III. Nevertheless, pooling data from different post-adoption years raises concerns on whether such a potential change is consistent throughout years. Clacher et al. (2013) stress that pooling multiple post-adoption years may mask what could be a temporary change in value relevance. In order to detect whether our results are temporary or if they persist through time, we follow Clacher et al. (2013) and re-estimate our model by pooling the pre-adoption period observations with each one of the three post-adoption years separately.

Table 4, columns 2, 3, and 4 report the estimated coefficients and standard errors of three regressions in which the three-year period before the adoption of King III is compared against each one of the first three post-adoption years separately. The coefficients of all variables in all three regressions are (in terms of magnitude and direction) overly similar to those found in the initial analysis. Hence, BVS and EPS are found to be positive and statistically significant at the 1% level in all three specifications. With regard to the interaction variable BVSxD, all three specifications suggest a decline in the value relevance of net assets since the coefficient is found to be negative in all three cases. Nevertheless, in the specification where the pre-adoption period is compared against the first year after the adoption of King III (i.e. 2011), the coefficient of BVSxD is not statistically significant, which indicates that the differences between the pre- and post- adoption valuation implications are more evident after the second year. In reference to earnings (EPSxD), our results are consistent for all specifications, indicating a strong significant increase in the valuation coefficient of earnings from the first year of King III adoption.

## 5.2 Alternative samples

We re-estimate our model by utilizing a number of alternative samples. First, we expand our sample by including firms that are found not to have available data for the full six-year period under examination (240 firm/year observations). Our new “unbalanced” sample consists of 1,194 firm/year observations. Further, we eliminate from both the initial “balanced” and the expanded “unbalanced” samples those firms that are found to have voluntarily published at least one sustainability report over the three-year period before the mandatory adoption of King III<sup>10</sup>. There is evidence which indicates that voluntary sustainability reporting has both a direct impact on a firm’s market valuation (Berthelot et al., 2012; Schadewitz & Niskala, 2010) and an indirect impact by affecting the value relevance of a firm’s book value of equity (Hughes, 2000) and earnings (Cormier & Magnan, 2007). Consequently, including firms that have engaged in sustainability reporting before the mandatory adoption of King III may distort the inferences that can be drawn from our results. The resulted “balanced” sample consists of 714 firm/year observations whereas the “unbalanced” one consists of 930 firm/year observations. Untabulated results from all three alternative samples are in line with the results obtained from the initial analysis: After the mandatory adoption of King III, book value of equity is found to partially lose its value relevance, whereas the relevance of earnings is found to be significantly higher.

---

<sup>10</sup> In order to identify which firms have published a sustainability report prior to the mandatory adoption of King III, we merge data from Thomson Reuters ASSET4 and GRI’s Sustainability Disclosure databases. ASSET4 contains environmental, social, and governance data for more than 4,000 firms around the world. The information is manually collected and quality controlled by experienced analysts of Thomson Reuters. The GRI Sustainability Disclosure Database contains all sustainability reports that the GRI is aware of, regardless of whether a report is prepared under the GRI guidelines or not. Both databases define a ‘sustainability report’ similarly to our study. In a like manner, the IIRC Framework acknowledges that an integrated report “*may be either a standalone report or be included as a distinguishable, prominent and accessible part of another report or communication*” (IIRC, 2013, pg.4).



### ***5.3 Interaction of accounting information with sustainability performance information***

The purpose of our study is to investigate whether the mandatory adoption of an IR approach enhances the value relevance of summary accounting information. Both the IIRC Framework and King III Report claim that the usefulness of accounting information is enhanced due to the interconnectedness of financial and sustainability reporting. Our basic research design assumes that such a relationship exists. In this additional test, we empirically examine this relationship. Specifically, we focus on the post-adoption period (2011-2013) and test first, whether sustainability performance information is value relevant and second, whether this information interacts with summary accounting information. In order to do so, we employ a model similar to our basic model which associates a firm's share price (PR) with its net assets per share (BVS) and its earnings per share (EPS)<sup>11</sup>:

$$\begin{aligned} PR_{it} = & \alpha_0 + \alpha_1 BVS_{it} + \alpha_2 EPS_{it} + \alpha_3 A4R_{it} + \alpha_4 (A4R_{it} \times BVS_{it}) + \alpha_5 (A4R_{it} \times EPS_{it}) + \\ & \alpha_6 LOSS_{it} + \alpha_7 (LOSS_{it} \times EPS_{it}) + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SIZE_{it} + \sum_{j=1}^{J=8} \alpha_{11j} IND_{it} + \\ & \sum_{y=2008}^{y=2013} \alpha_{12y} YR_{it} + \varepsilon_{it} \end{aligned}$$

Similar to previous studies (Hassel et al., 2005), we include in our model a variable which measures a firm's sustainability performance (A4R) and it is based on the environmental, social and governance (ESG) performance score as it is calculated by Thomson Reuters ASSET4 ESG database<sup>12</sup>. If coefficient  $\alpha_3$  of A4R is found to be statistically significant, then it can be inferred that sustainability performance has market valuation implications after the mandatory adoption of King III in the JSE. In addition, for testing whether summary accounting information

---

<sup>11</sup> Variables definitions are provided in the Appendix.

<sup>12</sup> ASSET4 ESG database collects information for up to 500 data points that cover every aspect of sustainability reporting. Based on these data points, over 180 key performance indicators are calculated and structured into 15 categories which fall into three pillars (environmental, social, and governance). Finally, an overall equal weighted performance score is calculated (that is the A4R variable). The score is calculated in a percentage scale. All the information used is publicly available and quality controlled by experienced analysts (Thomson Reuters, 2015).

indeed interacts with sustainability information, we allow the variable A4R to interact with BVS and EPS. If coefficients  $\alpha_4$  and  $\alpha_5$  are found to be significantly different than zero then we can conclude that sustainability performance information and summary accounting information indeed interact. Nevertheless, we refrain from hypothesizing the directions of the above relationships since previous studies have found conflicting evidence. For instance, Hassel et al. (2005) find a negative relation between sustainability performance and market valuation, whereas Sinkin et al. (2008) find a positive relation. Last, Michelin et al. (2013) find that the impact of sustainability performance on market value depends on the area of sustainability initiatives under examination.

Regarding the sample, we focus on the post-adoption period due to the fact that we are interested in testing whether accounting and sustainability information interact in the period that such an interaction is assumed by the IIRC Framework as well as the King III Report<sup>13</sup>. Thomson Reuters ASSET4 ESG database does not provide ESG data for all firms listed on the JSE; hence our analysis is restricted to a sample much smaller than the original. Specifically, 206 firm/year observations (which correspond to 85 firms) are used for estimating the model. Untabulated descriptive statistics reveal that the sample used in this additional test consists of firms that have significantly different characteristics than the average firm of our initial balanced sample. Such a small sample is a potential shortcoming of this additional test hence the results should be interpreted with caution.

[Insert Table 5 about here]

---

<sup>13</sup> Another reason for focusing on the post-adoption period is data availability. Sustainability performance information is available for only seven, eight and thirty firms in 2008, 2009, and 2010 respectively. Further, untabulated statistics indicate that the firms with available sustainability performance data in the pre-adoption period differ significantly in their characteristics from those in the post-adoption period. Hence, any comparison between the two periods might be misleading. We would like to thank a reviewer for this suggestion.

Table 5 shows the results of testing the interaction of sustainability performance information with summary accounting information. Panel A provides descriptive statistics of the 206 firm-year observations, Panel B presents Spearman's and Pearson's correlation coefficients, and Panel C shows the results of regression analysis. The regression results indicate that during the first three years of King III adoption, investors include sustainability performance information when they value a firm listed on the JSE. The main effect of this relation is found to be positive (0.404) and significant at the 5% level. Interestingly, when we turn our attention to the interaction between sustainability performance information and summary accounting information, we find that the coefficient of the interaction between net assets and sustainability performance (BVSxA4R) is negative (-0.015) and significant at 5% level whereas the interaction between earnings and sustainability performance (EPSxA4R) is positive (0.036) and significant at the 10% level.

Finally, we re-estimate our basic analysis model by including the sustainability performance variable A4R as an extra control variable in order to test whether the difference in the value relevance of net assets and earnings after the adoption of King III is evident even after controlling for the impact of sustainability performance<sup>14</sup>. Untabulated results are similar to those produced by our initial test<sup>15</sup>.

## 6. Discussion and concluding remarks

Our study is motivated by the recent developments in IR and specifically by the release of the IIRC Framework and the mandatory adoption of the King III Report in the JSE, as well as the calls for a closer investigation of the usefulness of IR to capital markets participants (Cheng et

---

<sup>14</sup> We would like to thank a reviewer for this suggestion.

<sup>15</sup> As we discuss before, variable A4R is available only for a small number of large firms. Specifically, A4R is missing for 74% of our balanced sample observations, with the largest amount of missing values being found in the pre-adoption period. We keep all observations of the full balanced sample by setting observations with missing values of A4R to zero and we include an indicator variable that takes the value of one if the A4R data is missing and zero otherwise in order to control for the effect of missing values.

al., 2014; de Villiers, 2014; Solomon & Maroun, 2012). According to the advocates of the new reporting trend, the mandatory adoption of an IR approach is expected to improve reporting quality (Cho et al., 2013; Eccles & Serafeim, 2011; Middleton, 2015) and specifically the value relevance of accounting information (Eccles and Saltzman, 2011; IIRC, 2013; IDSA, 2009). Our study provides evidence that after the mandatory adoption of an IR approach under King III, a sharp increase of earnings' valuation coefficient and a decline in the value relevance of net assets is found. These findings hold across alternative samples, different time periods and different model specifications.

Regarding the value relevance of earnings, our results are in line with the IIRC Framework and King III expectations as well as findings of prior studies (Cormier & Magnan, 2007; Lourenco et al., 2014). Similar to Lourenco et al. (2014), our results indicate that by connecting a firm's financial information with previously disconnected and, to large extent, unbooked pieces of information about its human, social and natural resources, the value relevance of its earnings is significantly increased. Further, following the rationale of Cormier & Magnan (2007), we suggest that, to the extent earnings-price relation captures a firm's cost of capital, the increased earnings valuation coefficient indicates that integrating financial and sustainability information has a negative impact on a firm's cost of equity capital. Such a remark is also in line with Dhaliwal et al. (2014), who find that the publication of a stand-alone sustainability report in countries where such report is mandated has a significantly larger negative effect on a firm's cost of capital than it has in countries where such a report is not mandated. Future studies may examine in more depth the effects of adopting an IR approach on firms' cost of capital.

Turning our attention to the second summary accounting figure, similar to Carnevale and Mazzuca (2014), our results indicate a decline in the value relevance of net assets. A possible explanation is given by studies such as Barth and McNichols (1994) and Hughes (2000), who provide evidence that investors include unbooked environmental liabilities when they value a

firm. To the extent that such liabilities are identified or measured more reliably after the introduction of an IR approach in the JSE, a decline in net assets makes intuitive sense. Moreover, empirical studies have shown that after King III adoption, South African listed firms not only provide an extensive discussion about the risks, challenges and uncertainties they face or are likely to encounter in the future (Marx and Mohammadali-Haji, 2014) but also they are continuously improving them (Ernst & Young, 2013, 2014). Based on these findings, we suggest that to the extent that the new reporting approach enables market participants to identify or measure more reliably a firm's current and future risks associated with sustainability or financial issues, the decline in the value relevance of net assets may be attributed to these risk disclosures. It should be noted, however, that despite its cause, the decline in the value relevance of net assets can be seen as a further argument in favor of the IIRC stance to assign equal importance to a wide range of "capitals," such as human, social and natural capital.

Also, it is worth mentioning that our results persist through time, and even three years after the adoption of an IR approach the valuation coefficients of net assets (earnings) remain steadily lower (higher) than they were in the pre-adoption period. It should also be mentioned that even though the value relevance of earnings is found to be significantly different from the first year of King III adoption, differences in the relevance of book value of equity are more evident from the second year onwards. A possible explanation for this finding could be that users of accounting information needed time to become familiar with the nature, requirements, and impact of the new reporting approach (Iatridis & Rouvolis, 2010). Another possible explanation is related to the quality of the report itself. According to Ernst and Young (2013), listed firms on the JSE have significantly improved the quality of their 2012 integrated reports in comparison to their 2011 reports. For instance, they avoided "boilerplate" formats and attempted to produce a report that reflects their unique aspects. Hence, it might be the case that integrated reports became "more integrated" in 2012 and as a result the consequences on the relevance of accounting information became more prominent. To conclude, our findings

suggest a change in value relevance with permanent characteristics, which is in favor of the long-term objective of the IIRC to change the current business model through a change in corporate reporting.

Another remark which is worth to be made is that according to King III the form of an integrated report shall not be important and focus shall be placed on the substance of the provided information. King III acknowledges that an integrated report can be a single document or a compilation of reports but it also stresses that “*a truly integrated report should be presented in one document*” (IDSA, 2009: Principle 9.1, par.1). Firms listed on the JSE have moved towards this direction since the very first year of King III mandatory adoption. According to GRI (2013) during the first two years after King III mandatory adoption the vast majority of its sample firms provide a single report in which they report both sustainability and financial issues. Similar evidence is provided by Ernst & Young (2013, 2014) for the years 2012 and 2013. Even though the empirical examination of the value relevance of accounting information under different report formats exceeds the scope of this study, our findings (especially the sharp increase in earnings valuation coefficient) may indicate that our results hold regardless of the form of the report and hence under King III substance indeed prevails over form. We urge further research on the value relevance of accounting information under different forms of integrated reporting.

Further, we discuss our results in light of IFRS implementation in the JSE. First, taking into account that firms listed on the JSE had to apply IFRS for the whole period under examination, our results indicate that book values and earnings reported under IFRS do not reflect a firm’s financial performance in relation to its sustainability performance (Carnevale & Mazzuca, 2014; Cormier & Magnan, 2007). If that was the case, we would not have witnessed such a dramatic change in the valuation coefficients of accounting numbers after the adoption of an IR approach in the JSE. Second, it is acknowledged that IFRS adopts a balance sheet approach due to the fact that the IFRS Framework recognizes assets as the main point of reference based on which all

other elements of financial statements are defined (Barker, 2010). This approach might lead to an increase in the relevance of net assets and to a decline in the relevance of earnings<sup>16</sup> (Hung & Subramanyam, 2007). After the introduction of an IR approach in JSE, however, an opposite trend is evidenced. This trend may indicate a decline in the ability of net assets to depict future economic benefits and an increase in the ability of current earnings to predict future earnings (i.e. earnings persistence) (Hung & Subramanyam, 2007).

Last, we find that under an IR approach the value relevance of earnings is significantly higher in firms that exhibit a high sustainability performance whereas the relationship of book value of equity and market values is negatively affected by a relatively high sustainability performance. Three important conclusions can be drawn from this finding. First, similar to Sinkin et al. (2008) and, to some extent, Michelon et al. (2013), sustainability performance is found to be positively associated to market values. Second, our results support IIRC's viewpoint that under an IR approach, financial and non-financial information will interact. Both summary accounting figures are found to significantly interact with sustainability performance. Third, the fact that a test on the interaction between summary accounting information and sustainability performance information produces similar results to that of our main test can be seen as supportive to our main conclusions as discussed previously.

In summary, after the mandatory integration of financial and sustainability information into one report we witness significant changes in the market valuation of summary accounting information of firms listed on the JSE. We believe that our findings are of particular interest to a wide range of audiences, such as the JSE and other capital markets authorities around the world, as well as the IIRC and accounting standard setters like International Accounting Standards Board. It also contributes to the academic debate on IR (Cheng et al., 2014; Cho et al., 2013; de Villiers, 2014; Eccles & Serafeim 2011; Middleton, 2015; Solomon & Maroun, 2012).

---

<sup>16</sup> It is worth adding that empirical evidence on this issue is mixed (Brown, 2011)

## Acknowledgments

We are thankful to Jill Atkins, Giuseppe Criaco, Giovanna Michelon and Andreas Stephan for their valuable comments and suggestions. Earlier versions of the study have been benefited from participants' comments at the 2013 Henley Centre for Governance, Accountability & Responsible Investment annual conference and the 2014 annual congress of the European Accounting Association. Finally, we are appreciative of the efforts of Larry Gordon (Editor-in-Chief), Martin Loeb (Editor), and two anonymous reviewers whose comments substantially improved our study. Gunnar Rimmel is also grateful to the Handelsbanken Research Foundation for funding of the research program 'Accounting for Sustainability – communication through integrated reports.' Remaining errors are ours.

## References

- Baboukardos, D., Rimmel, G., 2014. Goodwill under IFRS: Relevance and disclosures in an unfavorable environment. *Account. Forum.* 38(1), 1-17.
- Barker, R., 2010. On the definitions of income, expenses and profit in IFRS. *Account. Europe.* 7(2), 147-158.
- Barth, M. E., Beaver, W. H., Landsman, W. R., 2001. The relevance of the value relevance literature for financial accounting standard setting: another view. *J. Account. Econ.* 31(1), 77-104.
- Barth, M. E., McNichols, M. F., 1994. Estimation and market valuation of environmental liabilities relating to superfund sites. *J. Account. Res.* 32, 177-209.
- Berthelot, S., Coulmont, M., Serret, V., 2012. Do investors value sustainability reports? A Canadian study. *Corp. Soc. Responsib. Environ. Manag.* 19(6), 355-363.
- Brown, P., 2011. International Financial Reporting Standards: what are the benefits?. *Account. Bus. Res.* 41(3), 269-285.
- Bursa Malaysia, 2010. Business sustainability program aims to drive higher integration of sustainable practices among Malaysian listed companies [Press release] [http://bursa.listedcompany.com/newsroom/Media\\_Release\\_23Nov2010.pdf](http://bursa.listedcompany.com/newsroom/Media_Release_23Nov2010.pdf) (accessed 24.02.16).
- Carnevale, C., Mazzuca, M., 2014. Sustainability report and bank valuation: evidence from European stock markets. *Bus. Ethics European Rev.* 23(1), 69-90.
- Cheng, M., Green, W., Conradie, P., Konishi, N., Romi, A., 2014. The international integrated reporting framework: Key issues and future research opportunities. *J. Int. Financ. Manag. Account.* 25(1), 90-119.
- Cho, S. Y., Lee, C., Pfeiffer, R. J., 2013. Corporate social responsibility performance and information asymmetry. *J. Account. Public Policy.* 32(1), 71-83.
- Clacher, I., Ricquebourg, A. D., Hodgson, A., 2013. The value relevance of direct cash flows under international financial reporting standards. *Abacus*, 49(3), 367-395.



- Cormier, D., Magnan, M., 2007. The revisited contribution of environmental reporting to investors' valuation of a firm's earnings: An international perspective. *Ecol. Econ.* 62(3), 613-626.
- de Klerk, M., de Villiers, C., 2012. The value relevance of corporate responsibility reporting: South African evidence. *Meditari Account. Res.* 20(1), 21-38.
- de Villiers, C., Rinaldi, L., Unerman, J., 2014. Integrated Reporting: Insights, gaps and an agenda for future research. *Account. Audit. Account. J.* 27(7), 1042-1067.
- Dhaliwal, D., Li, O. Z., Tsang, A., Yang, Y. G., 2014. Corporate social responsibility disclosure and the cost of equity capital: The roles of stakeholder orientation and financial transparency. *J. Account. Public Policy.* 33(4), 328-355.
- Dimitropoulos, P. E., Asteriou, D., Kousenidis, D., Leventis, S., 2013. The impact of IFRS on accounting quality: Evidence from Greece. *Adv. Account.* 29(1), 108-123.
- Eccles, R. G., Saltzman, D., 2011. Achieving sustainability through integrated reporting. *Stanford Social Innovation Review.* Summer 2011, 56-61.
- Eccles R. G., Serafeim G., 2011. Accelerating the adoption of Integrated Reporting, in: de Leo F., Vollbracht, M. (Eds.), *CSR Index 2011*. InnoVatio Publishing Ltd., pp. 70-92.
- Ernst & Young, 2013. EY's Excellence in Integrated Reporting Awards 2013. [http://www.ey.com/Publication/vwLUAssets/EYs Excellence in Integrated Reporting Awards 2013/\\$FILE/EY%20Excellence%20in%20Integrated%20Reporting.pdf](http://www.ey.com/Publication/vwLUAssets/EYs%20Excellence%20in%20Integrated%20Reporting.pdf) (accessed 24.02.16).
- Ernst & Young, 2014. EY's Excellence in Integrated Reporting Awards 2014. [http://www.ey.com/Publication/vwLUAssets/EY-Excellence-In-Integrated-Reporting-2014/\\$FILE/EY-Excellence-In-Integrated-Reporting-2014.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Excellence-In-Integrated-Reporting-2014/$FILE/EY-Excellence-In-Integrated-Reporting-2014.pdf) (accessed 24.02.16).
- European Commission, 2014. Memo/14/301 Disclosure of non-financial and diversity information by large companies and groups - Frequently asked questions [Press release] [http://europa.eu/rapid/press-release MEMO-14-301\\_en.htm](http://europa.eu/rapid/press-release_MEMO-14-301_en.htm) (accessed 24.02.16).
- Global Reporting Initiative – GRI, 2013. The sustainability content of integrated reports – a survey of pioneers. <https://www.globalreporting.org/resourcelibrary/GRI-IR.pdf> (accessed 24.02.16).
- Gujarati D., 1995. *Basic econometrics*, third ed. McGraw-Hill, New York.
- Hassel, L., Nilsson, H., Nyquist, S., 2005. The value relevance of environmental performance. *European Account. Rev.* 14(1), 41-61.
- Hayn, C., 1995. The information content of losses. *J. Account. Econ.* 20(2), 125-153.
- Hughes, K. E., 2000. The value relevance of nonfinancial measures of air pollution in the electric utility industry. *Account. Rev.* 75(2), 209-228.
- Hung, M., Subramanyam, K. R., 2007. Financial statement effects of adopting international accounting standards: the case of Germany. *Rev. Account. Stud.* 12(4), 623-657.
- Iatridis, G., Rouvolis, S., 2010. The post-adoption effects of the implementation of International Financial Reporting Standards in Greece. *J. Int. Account. Audit. Tax.* 19(1), 55-65.
- Institute of Directors in Southern Africa – IDSA, 2009. King Report on Governance for South Africa 2009. <http://www.library.up.ac.za/law/docs/king111report.pdf> (accessed 24.02.16).
- International Integrated Reporting Council – IIRC, 2013. The International Integrated Reporting Framework. <http://integratedreporting.org/wp-content/uploads/2015/03/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf> (accessed 24.02.16).
- International Integrated Reporting Council – IIRC, 2014. Strategy: The breakthrough phase. <http://integratedreporting.org/wp-content/uploads/2015/02/IIRC-Strategy-Summary-2015.pdf> (accessed 24.02.16).
- Johnston, D., 2005. An investigation of regulatory and voluntary environmental capital expenditures. *J. Account. Public Policy.* 24(3), 175-206.
- Joos, P., Plesko, A. G., 2005. Valuing loss firms. *Account. Rev.* 80(3), 847-870.

- Lang, M., Raedy, J. S., Yetman, M. H., 2003. How representative are firms that are cross-listed in the United States? An analysis of accounting quality. *J. Account. Res.* 41(2), 363-386.
- Lourenco, I. C., Callen, J. L., Branco, M. C., Curto, J. D., 2014. The value relevance of reputation for sustainability leadership. *J. Bus. Ethics.* 119(1), 17-28.
- Marx, B., Mohammadali-Haji, A., 2014. Emerging trends in reporting: an analysis of integrated reporting practices by South African top 40 listed companies. *J. Econ. Financ. Sci.* 7(1), 231-250.
- Michelon, G., Boesso, G., Kumar, K., 2013. Examining the link between strategic corporate social responsibility and company performance: An analysis of the best corporate citizens. *Corp. Soc. Responsib. Environ. Manag.* 20(2), 81-94.
- Middleton, A., 2015. Value relevance of firms' integral environmental performance: Evidence from Russia. *J. Account. Public Policy.* 34(2), 204-211.
- Moneva, J. M., Cuellar, B., 2009. The value relevance of financial and non-financial environmental reporting. *Environ. Resour. Econ.* 44(3), 441-456.
- Norwegian Ministry of Finance, 2014. Financial Markets Report 2013. <https://www.regjeringen.no/contentassets/7a38def698b64488a427633f4dc2592b/en-gb/pdfs/stm201320140021000engpdfs.pdf> (accessed 24.02.16).
- Petersen, M. A., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Rev. Financ. Stud.* 22(1), 435-480.
- Prather-Kinsey, J., 2006. Developing countries converging with developed-country accounting standards: Evidence from South Africa and Mexico. *Int. J. Account.* 41(2), 141-162.
- Qiu, Y., Shaukat, A., Tharyan, R., 2014. Environmental and social disclosures: Link with corporate financial performance. *Br. Account. Rev.* Advance online publication <http://dx.doi.org/10.1016/j.bar.2014.10.007>
- Schadewitz, H. J., Niskala, M., 2010. Communication via responsibility reporting and its effect on firm value in Finland. *Corp. Soc. Responsib. Environ. Manag.* 17(2), 96-106.
- Singapore Exchange (2011). *Guide to sustainability reporting for listed companies.* [http://rulebook.sgx.com/net/file\\_store/new\\_rulebooks/s/g/SGX\\_Sustainability\\_Reporting\\_Guide\\_and\\_Policy\\_Statement\\_2011.pdf](http://rulebook.sgx.com/net/file_store/new_rulebooks/s/g/SGX_Sustainability_Reporting_Guide_and_Policy_Statement_2011.pdf) (accessed 24.02.16).
- Sinkin, C., Wright, C.J., Burnett, R.D., 2008. Eco-efficiency and firm value. *J. Account. Public Policy.* 27(2), 167-176.
- Solomon, J., Maroun, W. 2012. Integrated reporting: the influence of King III on social, ethical and environmental reporting. The Association of Chartered Certified Accountants, London.
- The Prince's Accounting for Sustainability Project-A4S and the Global Reporting Initiative-GRI, 2010. Formation of the International Integrated Reporting Committee (IIRC) [Press Release] <http://www.theiirc.org/wp-content/uploads/2011/03/Press-Release1.pdf> (accessed 24.02.16).
- Thomson Reuters, 2015. Thomson Reuters ESG data. In depth Environmental, Social and Governance (ESG) information on 5,000 global companies [Brochure] <http://financial.thomsonreuters.com/content/dam/openweb/documents/pdf/financial/asset4-esg-data-fact-sheet.pdf> (accessed 24.02.16).
- Venter, E. R., Emanuel, D., Cahan, S. F., 2014. The Value Relevance of Mandatory Non-GAAP Earnings. *Abacus*, 50(1), 1-24.

## Tables

**Table 1. Sample selection**

	Firm/Year obs.
<b>Initial</b> number of observations found in Datastream for the period 2008-2013	<b>1654</b>
less duplicates	- 74
less observations from Utilities industry (ICB code 7000)	- 6
less observations from Financials industry (ICB code 8000)	- 331
less observations with negative book value of equity	-11
less highly influential observations identified by Cook's distance* statistic	-38
less observations of firms with no available data in all six years	-240
<b>Final balanced sample</b>	<b>954</b>

\*Observations with Cook's distance higher than  $4/n$ , where  $n$  is the number of observations

**Table 2 Summary statistics**

	Full period			2008 - 2010			2011 - 2013		
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.
	(N=954)			(N=477)			(N=477)		
<b>Main variables</b>									
PR	28.91	8.07	43.82	24.32	8.05	36.40	33.51	8.37	49.78
BVS	13.02	5.14	17.98	11.51	4.63	15.55	14.54	5.67	20.03
EPS	3.31	1.09	5.34	3.32	1.20	5.28	3.29	1.07	5.41
<b>Controls</b>									
LEV	0.48	0.48	0.20	0.48	0.48	0.20	0.48	0.47	0.20
ROE	0.28	0.24	2.89	0.29	0.28*	0.96	0.27	0.21*	3.97
SIZE	14.38	14.41	1.95	14.26	14.33	1.94	14.51	14.54	1.95
LOSS	0.12			0.09			0.16		

\* indicates statistically significant difference between the pre- and post- adoption period at least at 5% level - Wilcoxon test for median difference is applied

Variables definitions are provided in the Appendix

**Table 3. Correlations matrix**

	PR	BVS	EPS	LEV	ROE	SIZE	D	LOSS
<b>N=954</b>								
PR		0.892*	0.869*	0.093*	0.395*	0.768*	0.054	-0.348*
BVS	0.789*		0.799*	0.003	0.149*	0.770*	0.054	-0.293*
EPS	0.794*	0.716*		0.153*	0.590*	0.659*	-0.052	-0.572*
LEV	0.074	-0.055*	0.122		0.289*	0.270*	-0.019	-0.034
ROE	0.028	-0.007	0.060*	0.061		0.207*	-0.185*	-0.572*
SIZE	0.603*	0.623*	0.523*	0.268*	0.033		0.059	-0.250*
D	0.105*	0.084*	-0.003	-0.012	-0.004	0.064*		0.098*
LOSS	-0.198*	-0.148*	-0.292*	-0.025	-0.138*	-0.268*	0.098	

Spearman's rank correlation coefficients and Pearson's correlation coefficients are provided above and below the diagonal respectively

\* indicates significant correlation at least at 5% level

Variables definitions are provided in the Appendix

**Table 4.** Regressions analyses: Pre- vs post- adoption periods results
$$\text{Model } PR_{it} = \alpha_0 + \alpha_1 BVS_{it} + \alpha_2 EPS_{it} + \alpha_3 D_{it} + \alpha_4 (BVS_{it} \times D_{it}) + \alpha_5 (EPS_{it} \times D_{it}) + \alpha_6 LOSS_{it} + \alpha_7 (EPS_{it} \times LOSS_{it}) + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SIZE_{it} + \sum \alpha_{11j} IND_{it} + \sum \alpha_{12y} YR_{it} + \varepsilon_{it}$$

	1	2	3	4
	Full period	pre- vs 2011	pre- vs 2012	pre- vs 2013
Constant	-43.417*** (11.706)	-28.878*** (10.769)	-33.351*** (11.525)	-25.607** (11.164)
BVS	1.187*** (0.240)	1.237*** (0.247)	1.173*** (0.245)	1.265*** (0.258)
EPS	2.325*** (0.626)	2.219*** (0.637)	2.359*** (0.634)	2.151*** (0.669)
D	8.089** (2.053)	-3.280** (1.214)	-2.340* (1.314)	-3.376** (1.525)
BVSxD	-0.474*** (0.173)	-0.376 (0.245)	-0.610*** (0.196)	-0.485*** (0.185)
EPSxD	3.164*** (0.624)	2.023*** (0.730)	3.652*** (0.688)	3.878*** (0.781)
<i>Controls</i>				
LOSS	2.939* (1.629)	2.973 (1.824)	3.415* (2.009)	2.311 (1.766)
EPSxLOSS	-2.584* (1.326)	-1.360 (1.456)	-3.313** (1.403)	-2.309 (1.409)
LEV	4.922 (5.862)	8.692 (5.906)	4.007 (6.282)	5.411 (5.321)
ROE	0.143 (0.120)	0.598 (0.586)	0.180 (0.161)	2.572*** (0.880)
SIZE	2.254*** (0.825)	1.820** (0.794)	2.287*** (0.846)	1.608* (0.836)
Industry effects	yes	yes	yes	yes
Year effects	yes	yes	yes	yes
N (firm/year)	954	636	636	636
Adj. R <sup>2</sup>	0.790	0.775	0.775	0.784

Column 1: Comparison of the value relevance of BVS and EPS by pooling all observations from the pre- and post- adoption periods.

Columns 2-4: Comparison of the value relevance of BVS and EPS by pooling all observations from the pre-adoption period with each post-adoption year separately.

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10% level respectively

Robust standard errors (in parentheses) clustered by firm

Variables definitions are provided in the Appendix

**Table 5. Additional analysis: Interaction effects of accounting information and sustainability performance information under IR approach**

$$\text{Model } PR_{it} = \alpha_0 + \alpha_1 BVS_{it} + \alpha_2 EPS_{it} + \alpha_3 D_{it} + \alpha_4 (BVS_{it} \times D_{it}) + \alpha_5 (EPS_{it} \times D_{it}) + \alpha_6 LOSS_{it} + \alpha_7 (EPS_{it} \times LOSS_{it}) + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SIZE_{it} + \sum \alpha_{11j} IND_{it} + \sum \alpha_{12y} YR_{it} + \varepsilon_{it}$$

Panel A. Summary statistics				Panel B. Correlations matrix								Panel C. Regression results						
	Mean	Median	S.D.		PR	BVS	EPS	A4R	LEV	ROE	SIZE	LOSS	Variables	Coef.	SE	Variables	Coef.	SE
<b>PR</b>	73.21	47.02	72.84	<b>PR</b>									<b>Constant</b>	22.027	70.413	<i>Controls</i>		
<b>BVS</b>	30.92	19.46	32.34	<b>BVS</b>	0.726*								<b>BVS</b>	2.048***	0.444	<b>LOSS</b>	5.399	7.055
<b>EPS</b>	6.95	4.16	9.17	<b>EPS</b>	0.833*	0.714*							<b>EPS</b>	1.804	1.273	<b>EPSxLOSS</b>	-3.762**	1.813
<b>A4R</b>	64.03	68.74	22.84	<b>A4R</b>	0.317*	0.296*	0.206*						<b>A4R</b>	0.404**	0.169	<b>LEV</b>	1.835	20.087
<b>LEV</b>	0.50	0.49	0.18	<b>LEV</b>	-0.045	-0.225*	0.050	0.112					<b>BVSxA4R</b>	-0.015**	0.007	<b>ROE</b>	8.086	5.391
<b>ROE</b>	0.24	0.24	0.52	<b>ROE</b>	0.146*	-0.032	0.242*	0.020	0.024				<b>EPSxA4R</b>	0.036*	0.019	<b>SIZE</b>	-1.395	3.873
<b>SIZE</b>	16.26	16.20	1.24	<b>SIZE</b>	0.473*	0.618*	0.411*	0.548*	0.167*	-0.132			<b>Industry effects</b>	yes		<b>N (firm/year)</b>	206	
<b>LOSS</b>	0.09			<b>LOSS</b>	-0.217*	-0.063	-0.348*	-0.079	-0.031	-0.436*	-0.013		<b>Year effects</b>	yes		<b>Adj. R2</b>	0.822	

Interaction of accounting information and sustainability performance in the post-adoption period (2011-2013)

Variables definitions are provided in the Appendix

Panel B: Spearman's rank correlation coefficients and Pearson's correlation coefficients are provided above and below the diagonal respectively

\* indicates significant correlation at least at 5% level

Panel C: Regression results of the value relevance of sustainability performance information and its interaction with summary accounting information

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10% level respectively / Robust standard errors clustered by firm

## Appendix

### Variables definitions

---

PR	Market value of equity (Datastream item identifier: MV) six months after fiscal year-end scaled by the number of common shares (Datastream item identifier: NOSH)
BVS	Book value of equity (Datastream item identifier: WC03995) scaled by the number of common shares (Datastream item identifier: NOSH)
EPS	Earnings before interest and taxation (Datastream item identifier: WC18191) scaled by the number of common shares (Datastream item identifier: NOSH)
D	Binary variable which equals one for the period after King III adoption (i.e. 2011-2013) and zero for the period before (i.e. 2008-2010)
LOSS	Binary variable which equals one if EPS is negative and zero otherwise
LEV	Firm's leverage computed as total liabilities (Datastream item identifier: WC03351) divided by total assets (Datastream item identifier: WC02999)
ROE	Firm's return on equity computed as earnings before interest and taxation (Datastream item identifier: WC18191) to book value of equity (Datastream item identifier: WC03995)
SIZE	Natural logarithm of total assets (Datastream item identifier: WC02999)
IND	Multiple dummy variable based on the eight out of the ten industries of the Industry Classification Benchmark (Datastream item identifier: ICBIC)
A4R	Overall equal weighted rate (on a % scale) that reflects a balanced view of a company's ESG performance (ASSET4 item identifier: A4IR)

---

All variables are based on data extracted from Thomson Reuters Datastream with the exception of A4R which is based on data from Thomson Reuters ASSET4